

southwards to Ireland, and northwards to the mountains of Mull and Arrochar. On the way down a dyke much more vitreous and obsidian-like than the other Arran pitch-stone, was crossed on the ridge between Caisteal Abhail and Cir Mhor, at the head of Glen Sannok. Another day the steps of the party were turned southwards, and as the red rocks of Glen Shurig, which runs inland from Brodick, had hitherto yielded no organic remains capable of identifying their precise geological position, the Professor instituted a methodical search, which resulted in the discovery of numerous more or less distinct impressions of the lycopod *psilophyton*, clearly proving them to be, as he had inferred, of Lower Old Red Sandstone age. Striking southward into Glen Dubh, the geologists then crossed the very perfect series of moraines, left there by the last valley glacier, and returning by Glen Cloy, and the well-known pitchstone dyke behind the Brodick Schoolhouse. The fossiliferous limestones and shales of Corrie were also well explored, and the position of this strata far down in the heart of the red sandstone series was remarked.

The concluding ramble of the week brought the party to the celebrated dyke of pitchstone at Corriegills, and the quartz-porphry of Dur Dubh, both possibly of Tertiary age.

The latter rock is alike remarkable for its petrographical characters and its geological structure and history. The quartz in it has crystallised into singularly perfect doubly-terminated pyramids, which can be picked up in handfuls from weathered crannies of the rock. Viewed from the north, the end of the quartz-porphry ridge is seen to present a remarkable columnar arrangement, the columns radiating from a common centre like the ribs of a fan. The Professor pointed out the resemblance of this structure to that of the west end of the Scur of Eigg, where a stream of vitreous lava has flowed into and filled up a narrow valley, the sides of which have disappeared, and where the radial structure of the pitchstone is due to the rock having cooled in an approximately semicylindrical gorge, perpendicular to whose sides the columns were formed. In each case the superior durability of the mass has enabled it to resist denudation better than the surrounding rocks, which have long ago been carried off, leaving the lava standing up as a prominent ridge. Most of the students left Brodick by the afternoon steamer on Saturday, after a most enjoyable week of geologising with Prof. Archibald Geikie on the last of the delightful long excursions with his Edinburgh class. H. M. C.

NOTES

THE following telegram from the Special Correspondent of the *Daily News* with the Eclipse Expedition to Egypt, appears in Tuesday's issue:—"Sohag, Monday, 7.20 p.m.: Every facility has been granted to the Eclipse Expedition by the Egyptian Government. The site chosen is close by the bank of the Nile. The instruments are being set up. The Khedive has shown great interest in the Expedition, and the English party, who are his guests, owe much to the arrangements made by the Governor. The officials and natives are everywhere civil and obliging. The weather apparently is quite settled." Under date of May 9 the *Times* correspondent telegraphs as follows:—"The various Eclipse expeditions arriving at Sohag are being entertained by the Khedive. Most important help has been given by Muktar Bey, the Colonel of the Staff representing the Khedive, and the Government, who have also provided a steamer and a military guard."

SINCE we noticed the pamphlet of Prof. Bloxam on the state of affairs at the Royal Military Academy, the subject has been brought before the House of Lords with some prominence; but the main points of complaint appear to have been ignored. If only a portion of the charges in Prof. Bloxam's pamphlet can be sus-

tained, they reveal a very deplorable want of discipline in an important and expensive public establishment, and also a feeling on the part of the authorities that subjects like physics and chemistry are of such minor importance to the scientific soldier as to warrant the withholding of the moral support to maintain discipline that Prof. Bloxam complains of. Some of the statements in the pamphlet are so severe that we hesitated to repeat them, but they do not appear to have been controverted. The position of a professor of a subject that is only looked upon as a sort of useless "extra," deprived to a great extent of the moral support of the heads of the establishment, cannot be a satisfactory one, and if the late Professor's charges and statements are correct, his successor is not to be envied.

WE regret to record the sudden death of Mr. Charles Hockin, at the early age of forty-two, in the midst of an active career as a civil engineer and electrician, on Wednesday, April 26 last. C. Hockin entered St. John's College, Cambridge, in October, 1859, from Aldenham Grammar School, and was elected scholar in the following May. After a successful career in mathematical work at his college he graduated as Third Wrangler in 1863. Choosing engineering as a profession he became pupil to Messrs. Forde and Fleeming Jenkin, and devoted his attention mainly to submarine telegraphy, a province in which his great mathematical abilities found scope, and in which he did much good work. He made, however, opportunities for other purely scientific pursuits, and co-operated with the late Dr. Matthiessen in his researches on the reproduction of electrical standards by chemical means, and also with Sir William Thomson and Clerk-Maxwell in the determination of the B.A. units of electrical resistance and capacity, as well as in the design and construction of the large standard electro-dynamometer for the Committee of the British Association. He was one of the earliest investigators of the resistance of selenium, a material to which so much attention has lately been devoted. His researches on the subject are referred to in the B.A. Report for 1867. In 1872 he joined as a partner the firm of Clark, Forde, and Co., and in the execution of his professional work visited every quarter of the globe, winning the respect and esteem of all with whom he came in contact and the affection of the few he admitted to his intimacy. While there have been few scientific men less eager than he was for personal fame, it is seldom that equal powers have been placed so readily as his were at the service of others, and there was no one whose opinion on the subjects to which he devoted himself was held in greater respect by scientific men. He devoted much time to mathematical investigations chiefly in connection with electricity, but comparatively little of his work has been published by himself, and it is to be hoped that his executors will see their way to the editing and publication of his mathematical papers.

WE learn from Prof. Ray Lankester that another zoological laboratory is to be erected on the shores of the Mediterranean. The French Government has decided to establish at Villafranca near Nice a zoological station, the sole object of which will be to provide accommodation to the numerous naturalists who every year are attracted to this locality by its great reputation as a hunting ground for marine animals. Dr. Jules Barrois, the distinguished embryologist, has been appointed director of the zoological station of Villefranche-sur-Mer. The existence near Nice of a laboratory accessible to strangers, approved by the director, will be an immense boon to English naturalists especially, since the Riviera is not separated from us by a very long journey, is a favourite resort of our countrymen, and is on the whole salubrious. It is the most favourable spot for the study of the Mediterranean fauna by the naturalists of northern countries; and though the new laboratory will by no means compete with or diminish the value of that at Naples, yet it will render possible a short visit to the Mediterranean for the purpose of

zoological work, whereas a long sojourn is rendered almost necessary by the much longer journey to Naples. Further it is well known that forms occur at Villafranca which are not found at Naples, as also many occur at Naples not to be found at Villafranca.

AN interesting account has been lately furnished by M. Plateau, the eminent Belgian physicist (who has been blind nearly forty years), of the sensations he experiences in his eyes. He has no sense of objective light even when directing his eyes towards the sun. But his visual field is always divided into spaces, some of which are pretty bright and others sombre or nearly dark, and which merge into each other. Their general tint alternates, in time, between grey and reddish. The relative arrangement of those different spaces is always the same, but the intensity of their tints varies. The central space seems now rather bright, now very dark; above and below, and on the left to the limits of the field, there is sometimes brightness, sometimes darkness, but on the right there is generally a vertical band, nearly black, and beyond this a space which is nearly always bright and reddish. These appearances follow all the movements of the eyes, which probably do not participate in the same way in the tints, but M. Plateau cannot distinguish what belongs to one from what belongs to the other. No connection of the general tint with the work of digestion is observed. The author states that he became blind through looking fixedly at the sun for some time, with a view to observing his after-sensations; it was not till about fourteen years after this that inflammation of the choroid set in, destroying vision, but, during the interval, he often saw coloured and persistent halos round flames, &c., and he advises those who have such vision to consult an experienced oculist.

WITH the approval of the Treasury, Mr. P. Edward Dove, of Lincoln's Inn, has been appointed Secretary to the Transit of Venus Commission.

THE University of London have determined to prosecute with energy before the City of London Livery Companies Commission their claim to administer the funds of Gresham College. For reasons which are given, it is alleged that the founder, Sir Thomas Gresham, intended to found a University for London without limitation to the City proper; and it is urged that his bequest, as at present administered, does not subserve that purpose, being merely devoted to occasional lectures.

SEVERAL commissions have been appointed by the French Government to report on the advisability of undertaking to flood the Algerian Sahara on the plan proposed by M. Roudaire. It is believed, on good grounds, that the report will be in favour of M. Roudaire's great scheme, and that the objections laid before the Academy of Sciences will be put aside.

THE fate of Capt. De Long, the commander of the *Jeannette* Arctic Expedition is now only too certain; Mr. Melville telegraphs from the mouth of the Lena, March 24, that he has found the Captain's dead body and those of his companions, as well as all papers and books. Mr. Melville was to search for the party under Lieut. Chipp in the other cutter.

THE *Daily News* Naples Correspondent writes:—"The illustrious Italian travellers, Capt. Bianchi and Signor Licata, secretary of the Naples African Club, are about to undertake a new expedition, the plan of which is as follows:—From the Bay of Biafra, in Guinea, they will traverse the hitherto unexplored high levels of the Cameroon Mountains in the direction of the Labi Lakes, and study the country in which rise the Congo, Niger, Gazelle Rivers, and Lake Tsad, to find the key of the hydrographic system of tropical Africa. From the lakes they will descend to Lake Luta, which was partly explored by Signor Gassi. They will then traverse the Uganda territory, going

north-east towards the Gallas country, already known to Capt. Bianchi, and return to Italy *viâ* Abyssinia and the Red Sea, having thus crossed Africa from west to east. They believe it will take four years to complete this immense journey, which will have principally a scientific aim."

THE *Natal Mercury* records the death of Mr. G. W. Stow, F.R.G.S. The telegram announcing his death reached Bloemfontein from Heilbron *viâ* Bethlehem. He was not only known by his geological surveys of Griqualand West and Natal, but he had been engaged for many years on a work on the Bushmen tribes, and another on the influx of the native races into the southern portion of Africa.

THE last news from Dr. O. Finsch, who has for the last two years and a half been exploring the Pacific Islands, is dated from Thursday Island, in Torres Straits, January 8, 1882. From September, 1880, to March, 1881, he had been in the little coral island of Matupi, near New Britain. After a visit to Sydney and New Zealand, he had gone to Thursday Island; thence he intended to visit North Australia and various islands in Torres Straits, after which he was to go to New Guinea, there to stay several months. Dr. Finsch has already sent to Berlin many boxes of collections in natural history and ethnology. He has already concluded from his researches, that all the Pacific races may be referred back to two stems—a straight-haired (Polynesians and Micronesians), and a crisp-haired (Melanésians and Papuans), and he is doubtful whether there do not exist connecting links between the two.

WE have already given such full details of the objects and methods of the International circumpolar observing stations, that we need only bring the record up to date by giving the list of the stations so far fixed upon, and the countries that are to occupy them:—(1) Point Barrow (north-west America), by the United States; (2) Great Slave Lake, England and Canada; (3) Lady Franklin Bay, United States; (4) Godthaab (West Greenland), Denmark; (5) Pendulum Islands, Germany (probably); (6) Jan Mayen, Austria; (7) Spitzbergen, Sweden; (8) Bossekop, Norway; (9) Sodankylä (67° 24' N., 26° 36' E.), Finland (probably); (10) Novaya Zemlya, Russia; (11) Dickson's Harbour, Holland; (12) Mouth of the Lena, Russia. Some of them are already occupied, and all of them will be during the summer.

PROF. ARTHUR GAMGEE will, on Tuesday next (May 16), give the first of a course of four lectures, at the Royal Institution, on Digestion; and Prof. David Masson will give the first of a course of four lectures on Poetry and its Literary Forms, on Saturday (May 20).

WE have received a report of the meeting of the Essex Naturalists' Field Club, held on February 25, when the preservation of Epping Forest in its natural condition was the subject of discussion. It was decided that the Conservators should be petitioned by the Club, on behalf of the natural history students of the metropolis, and a form of petition has been circulated among the various scientific societies and individual naturalists interested in this question. Those wishing to sign the memorial should communicate with the Hon. Sec., Mr. William Cole, Laurel Cottage, Buckhurst Hill, Essex.

APART from absence of soil and moisture, the height of the "timber line," according to Mr. Gannett (*Am. Jour. of Science*, April) is purely a question of temperatures, and he shows that in several parts of Western America the line rises rapidly as the latitude decreases. On the volcanic peaks of the Mexican plateau, *e.g.* it is higher by several thousands of feet than anywhere else in the United States. Even in the same latitude there are very marked differences in its height. The less the elevation of the surrounding country, other things equal, the lower is the limit of timber. Considering that this limit must

have approximately the same mean annual temperature everywhere, and that in abrupt ascent there is a decrease in mean annual temperature, of about 1° F. for every 300 feet, Mr. Gannett thought to determine the temperature at the timber line, from that of a station at or near the base (supposed, though not always correctly, to represent the average climate round the base), together with the height. The tabulated figures, for thirteen mountains, &c., yield the mean $30^{\circ}4$, which is probably very near the true mean annual temperature of the timber line. Should the result hold good, after wider observation, it will afford, Mr. Gannett says, a very valuable and easily obtainable isothermal, and also enable one to estimate the height of the timber line from thermometric stations at the bases of mountain ranges.

On April 26 M. Broch, president, and the delegates of the Bureau International des Poids et Mesures, presented to M. Tirard, the Minister of Commerce, specimens of the facsimile reproductions of the standard metres and kilogrammes preserved since the beginning of the century in the French National Archives. These copies have been executed with an alloy of platinum and iridium, in compliance with the instructions given by MM. Henry Sainte Clair-Deville and Debray. This great work has taken not less than ten years. These facsimiles have been sent to the Bureau at Breteuil, where they will be used in executing the copies ordered by the several nations for their use.

A NEW edition of Kelland and Tait's "Introduction to Quaternions" has been published by Macmillan and Co. While refraining from making any changes in the late Prof. Kelland's part of the work, Prof. Tait has re-cast his own where he fancied he could improve it.

THE Committee of the Sunday Society are more than usually active just now in connection with the motion for extending the opening of museums on Sundays, which Mr. George Howard is to propose in the House of Commons on the 19th inst. On the 17th inst. a National Conference of Delegates from Provincial Towns, Trade Societies, and other organisations, is to be held at the Westminster Palace Hotel under the presidency of Viscount Powerscourt, and in the evening of the same day a large meeting is to take place at St. James's Hall, when addresses are to be delivered by Lord Powerscourt, Lord Dunraven, Lord Dorchester, Mr. Thomas Burt, M.P., Mr. George Howard, M.P., Dr. Richardson, and others.

THE additions to the Zoological Society's Gardens during the past week include Six Northern Marsh Tits (*Parus borealis*) from Russia, presented by Mr. A. H. Jamrach; four Pigmy Pigs (*Porcula salviana* ♂ ♀ ♀) from Nepal, a Burmese Tortoise (*Testudo elongata*), a — Terrapin (*Clemmys*, sp. inc.) from Burmah, received on approval; two Green Monkeys (*Cercopithecus callitrichus*) from West Africa, a Grey-headed Love Bird (*Agapornis cana*) from Madagascar, received in exchange; a Water Chevrotain (*Hyomyschus aquaticus*), a Golden-haired Tiger Cat (*Felis chrysothrix*) from West Africa, a Mercenary Amazon (*Chrysotis mercenaria*) from Columbia, three Chiloe Wigeon (*Mareca chilensis* ♂ ♀ ♀) from Chili, a Silky Bower Bird (*Ptilonorhynchus violaceus*), two Blue-faced Honey-Eaters (*Entomysa cyanotis*) from Australia, a Red-handed Tamarin (*Midas rufimanus*) from Brazil, a Wild Duck (*Anas boschas* ♀), British, four Yellow-billed Cardinals (*Paroaria capitata* ♂ ♂ ♀ ♀) from South America, purchased.

OUR ASTRONOMICAL COLUMN

ANTHELM'S NOVA OF 1670.—The vicinity of this object will soon be in a favourable position for observation, and we may once more direct attention to the small star which occupies very nearly the place given by the observations of Hevelius and Picard in 1670. By a recent careful reduction of Picard's obser-

vations, the mean place of the object for the beginning of 1670 was found to be in R.A. 19h. 34m. 5s.3, Decl. $+26^{\circ}31'42''$, which, accurately brought up to 1880, give, R.A. 19h. 42m. 41s.3, Decl. $+27^{\circ}0'56''$. Near this point we find a telescopic star, which is No. 1814 of the Greenwich catalogue of 1872, the place there assigned differing from that reduced to the year from Picard's observations by $+3s.8$ in R.A., and $33'$ in declination, and the right ascension for 1670 is open to an error of quite two seconds, and in greater uncertainty than the declination. The small star is followed by one (*b*) 12s.6, about $4'9$ N., and a second (*c*) at 22s.4, about $2'0$ N. Its magnitude has been noted as follows:—1852, April 24, 10.11 m.; 1861, May 24, 12 m.; 1872, August 23, = *b*; 1874, November 13, 0.5 m. less than *b*, decidedly less at first view. Another star (*d*) follows the one nearly in the position of Nova, 32s.6, and is N. $1'7$. Prof. Schönfeld found from the observations of Hevelius and Picard combined, a place differing from that given above by $-2s.8$ in R.A., and $+0'3$ in declination.

VARIABLE STARS.—It is known that U Cephei had long been indicated as a probable variable star by the discordant magnitudes given by Schwed's estimates 1827-28, as arranged by Oeltzen, and when taken in hand for regular examination, its short period was soon detected by Cerski. Schwed's estimates were from 6.7 to 10m. It appears by no means improbable that if several other stars for which the magnitudes in the various catalogues are very discordant, were systematically examined, similar cases might be found. For instance, we have 17 *Andromedæ* noted from $3\frac{1}{2}$ to 7m., 16 *Leonis Minoris* 5 to 8m., 41 *Aquilæ* $3\frac{1}{2}$ to 6m., and 35 *Camelopardi* $5\frac{1}{2}$ to 8m.; the last, a double star, has already been found to be variable, as regards one component at least; but we have no approximation to the period.

THE COMET 1882 *a*.—The following places are derived from the same elements that were employed last week, and are for Greenwich midnight:—

		R.A.		Decl.		Log. distance from	
	1882.	h.	m.			Earth.	Sun.
May 13	...	0	41.0	...	$+74^{\circ}5'$		
14	...	1	4.7	...	$73^{\circ}33'$	9.9571	9.9715
15	...	1	26.9	...	$72^{\circ}51'$		
16	...	1	47.5	...	$72^{\circ}0'$	9.9539	9.9481
17	...	2	6.3	...	$71^{\circ}1'$		
18	...	2	23.4	...	$69^{\circ}54'$	9.9518	9.9227
19	...	2	38.7	...	$68^{\circ}40'$		
20	...	2	52.5	...	$+67^{\circ}23'$	9.9508	9.8949

Next week we may probably be in possession of elements which will allow of a close prediction of the comet's track as it approaches the sun. All the later orbits assign for the date of perihelion passage June 10.

BIOLOGICAL NOTES

FAUNA OF THE SUEZ CANAL.—Dr. C. Keller, who is engaged upon a zoological investigation of the Suez Canal, with a special view to determining what exchange of animals may have taken place between the Red Sea and the Mediterranean, has recently sent his first report from Ismailia to the St. Gall Society for Commercial Geography. He states that the exchange is proceeding slowly, owing no doubt to the presence of the lakes of bitter-water through which the canal was traced. The inhabitants of these very lakes seem to have been the first to commence migrations. This fact Dr. Keller has unquestionably ascertained with regard to several species of the lower animals; a particularly interesting case being that of a violet species of sponges, belonging to the fauna of the bitter lakes. This is now migrating in the canal towards the Mediterranean. He named this form *Lessepisia violacea*. Several larger species of fishes, which are now caught in plentiful quantities in the Timsah lake, have migrated there from the Mediterranean; amongst these are *Anarrhichas lupus*, *Solea vulgaris*, and *Polyprion cernium*. Other species have migrated from the Red Sea to the Timsah lake, perhaps to Port Said; amongst these Dr. Keller mentions a large dark green mackerel and several brightly coloured but small Acanthopteri. The canal itself, in the direction from the Timsah lake towards Port Said shows but a poor fauna; that of the bitter lakes is also poor with regard to different species, while the representatives of the few species that are there are excessively abundant.